Massive pulmonary embolism presenting with acute hemiparesis and aphasia: a case report of paradoxical embolism documented with transthoracic echocardiography

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Introduction: Prevalence of patent foramen ovale (PFO) is somewhere between 20 to 30% in general adult population. It is mostly asymptomatic, but specific circumstances like acute or transient right heart pressure elevation can cause interatrial shunting and consequent paradoxical embolism. It is defined by occurrence of systemic embolism in the context of deep vein thrombosis or pulmonary embolism. Cardiogenic source of embolism accounts for approximately 20% of ischemic strokes, of which at least some portion is considered to be associated with PFO, atrial septal defect or atrial septal aneurysm. Still, PFO in the context of ischemic stroke does not necessary prove causal relationship between two (can be "innocent bystander").[1-4]

Case report: 54-years-old male patient presented to the Emergency Care Unit with acute development of right-sided hemiparesis, aphasia and worsening of dyspnea lasting for couple of days. Urgently, computed tomography (CT) of brain was performed, which initially showed no signs of cerebral ischemia or hemorrhage. Transthoracic echocardiography was performed and acute right heart dilatation with flattening of interventricular septum was visualized, with systolic pulmonary pressure measuring 90 mmHg suggesting acute pulmonary embolism. Also, large thrombotic masses floating in the right atrium, passing into the right ventricle through tricuspid valve were visualized, with large thrombus trapped in PFO, showing pending paradoxical embolism (**Figure 1**, **Figure 2**). CT pulmonary angiogram confirmed massive pulmonary embolism. Systemic fibrinolytic therapy was administered with complete resolution of thromboembolic masses in the heart but with persisting neurological deficit. CT angiography of brain was performed, and acute medial cerebral artery occlusion was visualized. Urgent thrombectomy was performed. Subsequently deep vein thrombosis of lower limb was found. During first 4 weeks anticoagulant therapy imposed significant risk and inferior vena cava (VCI) filter was implanted. After device explantation, long term anticoagulant therapy was continued. Patient is regarded to be a candidate for PFO occlusion device implantation in the future.

FIGURE 1. Large thrombus floating in the right atrium and right heart dilatation.

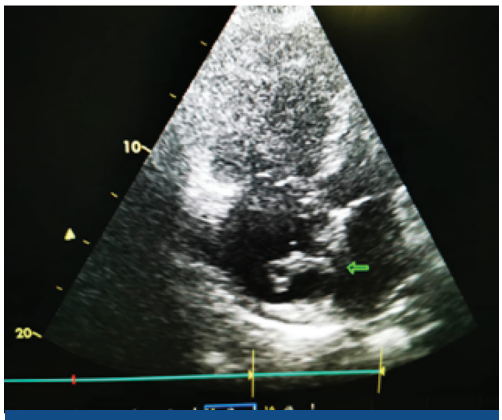

FIGURE 2. Large thrombotic masses passing through patent foramen ovale as a sign of paradoxical embolism.

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Conclusion: For secondary prevention of systemic embolism and stroke in patients with PFO antiplatelet or anticoagulant therapy or PFO occlusion device implantation seem to be reasonable options. Decision about treatment option is made depending on patient age, risk factors, other possible sources of embolism and atrial septal anomaly characteristics.

LITERATURE

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